

Other work along the aforementioned lines during the first and second semesters was as follows:

Five informal talks on meteorology, instruments, etc., to mixed classes of University students that visited the office from time to time.

One lecture, on "Instruments and Methods used in Determining Climatic Conditions and Changes", to a body of visiting State teachers.

One lecture, on "Applied Meteorology", (illustrated) to the society of senior and junior engineers, University of Missouri.

One lecture, on "Practical Weather Forecasting", to the class in physics, Columbia High School.

One lecture, on "Applied Meteorology", (illustrated) before the "Scientific Association of the University of Missouri".

Mr. W. A. Shaw, Northfield, Vt., under date of April 16, 1906, reports that he has just completed a course of instruction in meteorology given to the senior class in Norwich University. This course covers a period of two hours per week during the winter term of twelve weeks. Waldo's Elementary Meteorology is used as a text-book for the foundation of the course, which is much amplified by reference to other standard works, maps, charts and publications of the Bureau. Special attention is given to the utility of meteorological reports, publications, and forecasts. He has given this course for the past ten years. It is a required study for all members of the senior class, who must pass a satisfactory examination in it as a prerequisite for graduation.

The college has recently purchased a Bausch & Lomb projection and photomicrographic apparatus of high grade which has been placed at the disposal of the observer so far as it can be utilized in his work. It is planned to use this equipment in work on snow crystals, clouds, lightning, and in making lantern slides of maps and charts to illustrate lectures on meteorology.

Mr. Shaw has been informed by President Spooner that in recognition of his work he has been made a member of the faculty, with the title of Professor of Meteorology.

Mr. A. H. Thiessen, Raleigh, N. C., under date of April 11, 1906, reports that he has just finished a course of lectures on meteorology and its applications, delivered to seniors in agriculture at the State College of Agriculture and Mechanic Arts. The class numbered about ten students.

Mr. M. R. Sanford, Syracuse, N. Y., under date of May 31, 1906, reports that the course in meteorology at Syracuse University, instead of being confined to the second semester, will be extended so as to continue throughout an entire college year, and in addition to this occasional lectures will be given on the general work of the Weather Bureau.

The following lectures and addresses by Weather Bureau men are reported:

Mr. H. F. Alciatore, May 23, 1906, a public address in the auditorium of the Little Rock, Ark., High School; also May 29, 1906, before the University of Arkansas, Fayetteville, on "The Work of the Weather Bureau", with lantern slide illustrations.

Mr. E. H. Bowie, May 11, 1906, before the St. Louis, Mo., Railway Club, on "The Weather Bureau and its Relation to Transportation", with lantern slide illustrations. (The paper and many of the illustrations are reproduced in the Official Proceedings of the Club, Vol. XI, No. 1.)

Mr. Ford A. Carpenter, May 28, 1906, before the senior class of the San Diego, Cal., State Normal School, on "Meteorology."

Mr. M. R. Sanford, May 3, 1906, before the students and members of the faculty of Syracuse University, a lecture illustrated with lantern slides; also May 12, 1906, an address

to the Principal's Council of Onondaga County, on "Meteorology in the Schools".

Mr. J. M. Sherier, May 3, 1906, before the Contemporary Club, of Davenport, Iowa, on "Weather Forecasts and Warnings", with lantern slide illustrations.

Mr. F. J. Walz, May 19, 1906, before the Louisville, Ky., Educational Association, on "The Weather", illustrated with lantern slides.

Classes from universities, schools, and academies have visited Weather Bureau offices, to study the instruments and equipment and receive informal instruction, as reported from the following offices:

Buffalo, N. Y., May 1, 1906, a physical geography class from the Central High School; May 8, a class from Buffalo Mount Mercy Academy; May 15, a physical geography class from the Lafayette High School.

Detroit, Mich., May 9 and 11, 1906, classes of High School students; May 26, Prof. C. A. Davis and his class in meteorology, from the University of Michigan, Ann Arbor.

Hannibal, Mo., April 12, 1906, a class from the South School.

Hartford, Conn., May 28, 1906, senior grade pupils of the Arsenal Grammar School.

Pensacola, Fla., May 28, 29, and 30, 1906, the physical geography class of the Pensacola High School, in three sections.

Santa Fe, N. Mex., May 1, 1906, the eight grade pupils of the Allison Mission School.

Springfield, Mo., May 24, 1906, the physical geography class of the Springfield Normal School.

Syracuse, N. Y., May 4, 1906, a class from the Warners, N. Y., High School.

EDUCATIONAL NOTES.

We are informed that the question of offering meteorology as a course of instruction to the students of the University of Arkansas will be taken up as soon as the legislature makes the necessary appropriations, as the university authorities are satisfied that the study of meteorology and climatology will prove of practical benefit.

For admission to Harvard College as a candidate for the degree of S. B., under the new system which goes into effect this year, (as for some years hitherto for admission to the college as a candidate for the degree of A. B., or to the Lawrence Scientific School) a candidate may offer meteorology as one of the elective advanced studies. The student must have pursued a course of observational study, and must take both a written and a laboratory examination; the latter may include the use of instruments, the discussion of observations, and the construction and interpretation of weather maps and climatic charts. A knowledge of elementary physics is required for taking this preparatory course in meteorology, and the university has issued a pamphlet entitled "An Outline of Requirements in Meteorology", to serve as a guide in pursuing the study for the examination. The examination, if passed, counts as one point of the total twenty-six points required for entrance into Harvard College or the Scientific School. The work of preparation in this subject is substantially equivalent to that in the elementary course in meteorology (Geology B) offered to students of the university.

The method of teaching meteorology by laboratory experimentation, by personal drawings, observations, and computations, as distinguished from the mere committing to memory the statements of a text-book, is well illustrated by pages 10-25 of a little pamphlet entitled "Topics in Elementary Geography," by C. P. Sinnot, of the State Normal School, Bridgewater, Mass. This consists of questions or problems

that can be answered merely by reference to the ordinary text-books, or by personal experiments. The student is supposed to have some simple apparatus by means of which the necessary experiments can be made. The pamphlet is very suggestive, and something like it, on a larger scale, would be welcome to many teachers, although nothing can quite take the place of a teacher's personal ingenuity and ability.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be loaned for a limited time to officials and employees who make application for them.

Bombicci, Luigi.

Di talune recenti idee sulla formazione della grandine e della pretesa potenza dei vortici degli spari grandinifughi. 44 pp. f°. Bologna. 1901.

Borea, Eligio.

Gli spari contro la grandine. 36 pp. 8°. Pavia. 1899.

Commission Royale pour la Mesure d'un Arc de Méridien au Spitzberg.

Missions scientifiques pour la mesure d'un arc de méridien au Spitzberg entreprises en 1899-1902 sous les auspices des gouvernements suédois et russe. Mission suédoise. Tome II. VIII section. Météorologie. v. p. f°. Stockholm. 1903-1906.

Egypt. Survey Department.

Meteorological report for the year 1903. 211 pp. 12°. Cairo. 1905.

Ginestous, G.

Étude sur le climat de la Tunisie. (Extrait du Bulletin de la Direction de l'Agriculture et du Commerce.) 177 pp. 8°. Tunis. 1903.

Hadley Climatological Laboratory.

Evaporation from water surfaces from Albuquerque, N. M. (Bulletin, vol. 3, No. 10.) 14 pp. 8°. Albuquerque, N. M. 1905.

Hamburg. Deutsche Seewarte.

Jahresbericht über die Tätigkeit... iv, 51 pp. 4. Hamburg. 1906.

Hongkong Observatory.

Meteorological observations, 1905. (17), 108 pp. f°. Hongkong. 1906.

Krakau. Observatorium.

Materyaly zebrane przez Sekcje meteorologiczna w roku 1904. 73 pp. 8°. n. p. n. d.

Kremsmünster. Sternwarte.

Resultate... 1904... meteorologischen Beobachtungen. 28 pp. 8°. Wels. 1905.

Lausanne. Institut Agricole. Station Météorologique du Champ-de-l'Air.

Observations météorologiques. 1905. ix, 42 pp. 4°. Lausanne. 1906.

Modena. Università. Osservatorio Geofisico.

Osservazioni meteorologiche 1901-1902. 113 pp. f°. Modena. 1906.

Montessus de Ballore, F[ernand].

Les tremblements de terre. Géographie sismologique. v, 475 pp. 8°. Paris. 1906.

Netherlands. Koninklijk Nederlandsch Meteorologisch Instituut.

Jaarboek. 1904. xxxiv, 244 pp. f°. Utrecht. 1906.

Mededeelingen en Verhandelingen. 1-4. v. p. 8°. Utrecht. 1906.

Riggenbach, A[lbright].

Die bei Regenmessungen wünschbare und erreichbare Genauigkeit. (S. A.-Verh. Natf. Ges., Basel. Teil VIII, Heft 3, 1888.) Pp. 579-590. 8°.

Royal Society of New South Wales.

Journal and Proceedings, 1904. v. p. 8°. Sydney. 1904.

Shaw, W[illiam] N[apier] and Lempfert, R. G. K.

The life history of surface air currents. A study of the surface trajectories of moving air. (Great Britain M. O. 174.) 107 pp. f°. London. 1906.

Sonnblick-Verein.

Jahresbericht... 1905. 50 pp. 4°. Wien. 1906.

Stewart, Charles M.

The meteorology of South Africa. 42 pp. 8°. n. p. [1905.]

Stonyhurst College Observatory.

Results of meteorological and magnetical observations... 1905. vi, 55 pp. 12°. Clitheroe. 1906.

Thevenet, A.

Essai de climatologie algérienne. 118 pp. f°. Alger-Mustapha. 1896.

Wiesner, J[ulius].

Beiträge zur Kenntnis des photochemischen Klimas des Yellowstone-Gebietes... 14 pp. f°. Wien. 1906.

Württemberg. Königliches Württembergisches Meteorologisches Zentral-station.

Deutsches meteorologisches Jahrbuch 1903. 58 pp. f°. Stuttgart. 1906.

RECENT PAPERS BEARING ON METEOROLOGY.

H. H. KIMBALL, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —

Electrical World and Engineer. New York. Vol. 47. June 2, 1906.

— Lightning arresters. Pp. 1106-1107.

Journal of the Meteorological Society of Japan. Tokyo. 25th year. Feb., Apr., 1905.

Mukasa, H. Das Temperaturverhältnis von Tsimulpo, Korea. Pp. 1-6.

Okada, T. Contributions to the studies of psychrometer covering. Pp. 1-10.

Journal and Proceedings of the Royal Society of New South Wales. Sydney. Vol. 38, 1904.

Jensen, H. I. Possible relations between sun spots and volcanic and seismic phenomena. Pp. 40-90.

Journal of the Scottish Meteorological Society. Edinburgh. 3d series. No. 22.

Halm, J[acob]. On the relations between the diurnal changes of temperature and atmospheric pressure. Pp. 191-214.

— [Meteorological returns from Hebron.] P. 234.

— [Meteorological returns from Christmas Island.] P. 234.

Nature. London. Vol. 74. May 10, 1906.

Dines, W. H. Balloons and kites in the service of meteorology.

Proceedings of the Royal Society. London. Series A. Vol. 77. No. 518.

Chree, C. A discussion of atmospheric electrical potential results at Kew, from selected days during the seven years 1898 to 1904. Pp. 385-387.

Dines, W. H. The vertical temperature gradients on the west coast of Scotland and at Oxshott, Surrey. Pp. 440-450.

Quarterly Journal of the Royal Meteorological Society. London. Vol. 32. April, 1906.

Bentley, Richard. The meteorology of daily life. Pp. 81-112.

Mawley, Edward. Report on the phenological observations for 1905. Pp. 113-139.

Dallas, W. L. Brief discussion of the general features of the pressure and wind conditions over the trades-monsoon area. Pp. 141-150.

Newton, William B. The dispersion or prevention of fogs. Pp. 151-155.

Hann, J[ulius]. The temperature of cyclones and anticyclones. [Translated by R. H. Scott.] Pp. 162-168.

Scientific American. New York. Vol. 94. June 16, 1906.

— European earthquake recorders. P. 498.

Scientific American Supplement. New York. Vol. 61. May 25, 1906.

— Relative total heat received from sun and sky during any day by horizontal surfaces. P. 25418.

Symons's Meteorological Magazine. London. Vol. 41. May, 1906.

— The green flash in fiction. Pp. 68-70.

Archives des Sciences Physiques et Naturelles. Genève. 4 période. Tome 21.

Dufour, Henri. La conductibilité de l'air dans les locaux habités. Pp. 361-367.

Comptes Rendus de l'Académie des Sciences. Paris. Tome 142. 14 Mai 1906.

Maillet, Edmond. Sur les grandes crues de saison froide dans les bassins de la Seine et de la Loire. Pp. 1111-1113.

Revue Néphologique. Mons. Mai 1906.

Farman, —. Pocky clouds et statoscope. Pp. 34-35.

Annalen der Hydrographie und Maritimen Meteorologie. Berlin. 34 Jahrgang. Heft 5, 1906.

Meinardus, Wilhelm. Periodische Schwankungen der Eistrift bei Island. Pp. 227-239.

B., v. d. Ein Wirbelsturm im Tuamotu- (Paumotu-) Archipel vom 12. bis 14. März 1905. Pp. 243-244.

— Taifun in der südlichen Formosa-Strasse am 1. und 2. Juli 1905. Pp. 244-246.

Annalen der Physik. Leipzig. 4 Folge. Band 20. Heft 1, 1906.

Schering, Harald. Der Elster-Geitelsche Zerstreuungsapparat und ein Versuch quantitativer absoluter Zerstreuungsmessung. Pp. 174-195.

Beiblätter zu den Annalen der Physik. Leipzig. Band 30. Heft 10, 1906.

H[asenöhr], [F.] Zur Theorie des von einer kreisförmigen Licht-